CHAPTER 37

# Common Components

This chapter describes the level of support that Cisco ANA provides for components common to all network elements, as follows:



## Information Model Objects (IMOs)

This section describes the following IMOs:

# Physical Layer

The Physical Layer object is bound by its Containing Termination Points attribute to a Port Connector object. It is accessed by the data link layer bound by its Contained Connection Termination Points attribute.

The polling interval for each of the four "Thresholds" attributes is marked as Not Applicable (N/A) because it does not originate from the modeled NE. Instead, it is taken from the TCA system of the VNE.

**Note** The following attributes are configured in the registry and not retrieved from the device.

***Table 37-1 Physical Layer (IPhysicalLayer)***

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Media Type | Physical media type (*Null, Thin Coax, Thick Coax, Fiber Optic, Multi Mode Fiber Optic, Single Mode Fiber Optic, Short Single Mode Fiber Optic, Long Single Mode Fiber Optic, UTP, STP, FTP, EIA/TIA-232, EIA/TIA-449, V.35, X.21, EIA/TIA-530, EIA/TIA-530A, Generic Serial, EIA/TIA-612/613, Other*) | Any | Configuration |
| Clocking Source | Clocking source (*Unknown, Other, Network, Internal, Loop Timed, External, None, Line, Back Plane, Adaptive Timing*) | Any | Configuration |
| Maximum Speed | Maximum supported speed with units specification | Any | System |
| Is Internal Port | Indicates an internal port, such as between module and backplane (*True, False*) | Any | Configuration |
| Maximum and Minimum Discarded Thresholds | Maximum and minimum discarded input bandwidth thresholds | Any | N/A |
| Discarded Bandwidth | Current discarded input bandwidth | Any | Configuration |
| Maximum and Minimum Dropped Thresholds | Maximum and minimum dropped output bandwidth thresholds | Any | N/A |
| Dropped Bandwidth | Current dropped output bandwidth | Any | Configuration |
| Maximum and Minimum Input Thresholds | Maximum and minimum utilized input bandwidth thresholds | Any | N/A |
| Input Bandwidth | Current utilized input bandwidth | Any | Configuration |
| Maximum and Minimum Output Thresholds | Maximum and minimum utilized output bandwidth thresholds | Any | N/A |
| Output Bandwidth | Current utilized output bandwidth | Any | Configuration |
| Discarded and Received Input Data Counters | Discarded and received input octets and packets counters | Any | Topology L1 |
| Dropped and Forwarded Output Data Counters | Dropped and forwarded output octets and packets counters | Any | Topology L1 |
| Administrative Status | Administrative status (*Unknown, Up, Down, Testing*) | Any | Status |
| Operational Status | Operational status (*Unknown, Up, Down, Testing, Dormant, Not Present*) | Any | Status |
| Operational Status Last Change | Date of last operational status change | Any | Configuration |

*Table 37-1 Physical Layer (IPhysicalLayer) (continued)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| IANA Type | Internet Assigned Numbers Authority (IANA) type of the sublayer | N/A | N/A |
| Containing Termination Points | Underlying termination points (connection or physical) | Any | N/A |
| Contained Connection Termination Points | Bound connection termination points | Any | N/A |

# Bridging Entity

The Bridging Entity object describes the IEEE 802-based protocol- independent forwarding component of an IEEE 802 bridge or switch. It is bound by its Logical Sons attribute to all the data link layer objects (such as Ethernet Interface) among which this Bridging Entity is bridging or switching IEEE 802-based data link frames.

*Table 37-2 Bridging Entity (IBridge)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Bridge Table | Array of Bridging Entries | Any | Configuration |
| Type | Bridge type (*Null, Automatic, Regular, Bridge Route*) | Any | Configuration |
| MAC Address | Bridge internal MAC address used either for running Spanning Tree Protocol (STP) or for bridge network management | Any | Configuration |
| IP Interface | OID of the IP interface used mainly for routing traffic from that bridge | Any | Configuration |
| Name | Bridging entity name | Any | Configuration |
| Logical Sons | Array of all IEEE 802-based data link interfaces among which this Bridging Entity is bridging or switching IEEE 802-based data link frames | Any | Configuration |
| VLAN Type | The type of VLAN | Any | Configuration |

# Bridging Entry

The Bridging Entry object describes a domain-wide bridge table entry within a Bridging Entity.

*Table 37-3 Bridging Entry (IBridgeEntry)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Destination MAC Address | Destination station MAC address | Any | Configuration |
| Outgoing Interface | Underlying outgoing interface (Cisco Ethernet Channels, Ethernet Interfaces, Virtual LAN Interfaces or Virtual LAN Multiplexers) | Any | Configuration |

# VC Multiplexer

The VC Multiplexer object is bound by its Containing Termination Points attribute to either an ATM Interface or a Frame Relay Interface object. It is accessed primarily by the data link layer VC Encapsulations bound by its Contained Connection Termination Points attribute.

*Table 37-4 VC Multiplexer (EncapMux)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Virtual Connection Count | Bound virtual connection count | Any | Configuration |
| IANA Type | Internet Assigned Numbers Authority (IANA) type of the sublayer | N/A | N/A |
| Containing Termination Points | Underlying termination points (ATM Interface or Frame Relay Interface) | Any | N/A |
| Contained Connection Termination Points | Bound connection termination points (VC Encapsulations) | Any | N/A |

# VC Encapsulation

The data link layer VC Encapsulation object is bound by its Containing Termination Points attribute to an ATM or Frame Relay VC Multiplexer object. It is accessed primarily by a network layer object (such as an IP Interface), and also by the data link layer object (such as an Ethernet Interface or PPP Encapsulation) bound by its Contained Connection Termination Points attribute.

*Table 37-5 VC Encapsulation (IVcBasedEncapsulation)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Virtual Connection | Virtual connection (ATM Virtual Connection or Frame Relay Virtual Connection) | Any | Configuration |
| Binding Information | Binding information (*User Name*, …) | Any | Configuration |
| Binding Status | Binding status (*Not Bound, Bound*) | Any | Configuration |
| IANA Type | Internet Assigned Numbers Authority (IANA) type of the sublayer | N/A | N/A |
| Containing Termination Points | Underlying termination points (connection or physical) | Any | N/A |
| Contained Connection Termination Points | Bound connection termination points | Any | N/A |

# Virtual Cross Connection

The Virtual Cross Connection object describes either a Virtual Connection Switching Entity-wide or an ATM Interface-specific Cross Connect table's entry.

*Table 37-6 Virtual Cross Connection (IVcCrossConnect)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Ingress and Egress Virtual Connection | Ingress and egress virtual connections (ATM Virtual Connection or Frame Relay Virtual Connection) | Any | Configuration |
| Ingress and Egress Port | Ingress and egress ports (*Port Connectors*) | Any | Configuration |

# Forwarding Component Container

The Forwarding Component Container object aggregates a single type of Forwarding Component, such as a Routing Entry, Bridging Entity or Virtual Connection Switching Entity.

*Table 37-7 Forwarding Component Container (IFWComponentContainer)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Forwarding Components | Array of a single type of forwarding component | Any | Configuration |
| Type | Forwarding component (*Null, Routing Entities, Bridges, VRFs, LSEs, VC Switching Entities, L2TP Peers, MPBGPs, IMA Groups*) | Any | Configuration |

# Traffic Descriptor Container

The Traffic Descriptor Container object is basically a container of any table's entries. It aggregates a single type of Traffic Descriptor.

*Table 37-8 Traffic Descriptor Container (ITrafficDescriptorContainer)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Traffic Descriptors | Array of a single type of traffic descriptor | Any | Configuration |
| Type | Descriptor type (*Null, ATM Traffic Profiles, ADSL Traffic Descriptors, SDSL Traffic Descriptors, IDSL Traffic Descriptors, SHDSL Traffic Descriptors, MPLS Properties, CAC Profiles, ATM Access Profiles, OSPF Networks, BGP Neighbor, Access Lists, Tunnel Traffic Descriptors, QoS Policies, QoS Classes, IS-IS Database, QoS WRED, ATM Traffic Shaping Profile, Frame Relay Traffic Profiles, Rate Limit, Filter, Policer, IP Pools, ISAKMP Policies, IPsec Maps, Process List, Installed Software, L2TP Peer Group, L2TP Domain Group, QoS Object Table, QoS Class Map, QoS Policy Map, QoS Match Statements Table, QoS Queueing Config Table, QoS Service Policy Table, ADSL 2 Traffic Descriptors, ADSL 2 Spectrum Descriptors*) | Any | Configuration |

# Tunnel Container

The Tunnel Container object aggregates instances of a single type of tunnel interface (either MPLS TE Tunnel Interfaces or PTP Layer 2 MPLS Tunnel Interfaces).

*Table 37-9 Tunnel Container (ITunnelContainer)*

| Attribute Name | Attribute Description | Scheme | Polling Interval |
|---|---|---|---|
| Tunnel Edges | Array of either PTP Layer 2 MPLS Tunnel Interfaces or MPLS TE Tunnel Interfaces | Any | Configuration |

# Network Topology

The Cisco Discovery Protocol (CDP), although proprietary, plays a major role in discovery of all Cisco network equipment. Cisco ANA uses it as part of the data link topology discovery for all Cisco network elements. It uses CDP by searching for the existence of local CDP neighbor signatures, gathered from the CDP process, in any remote side port of the same type.

LLDP, which is a standard discovery protocol for the data link layer, is also used for link discovery on the Cisco devices which support this protocol. Cisco ANA uses LLDP by searching for the existence of local LLDP neighbor signatures, gathered from the LLDP process, in any remote side port of the same type.

# Service Alarms

The following alarms are supported for this technology:

- Cloud Problem, page 41-22
- Discard Packets, page 41-26
- Dropped Packets, page 41-27
- Link Down, page 41-42
- Port Down, page 41-51
- Rx Utilization, page 41-53
- Tx Utilization, page 41-57